

AMENDMENTS TO THE CLAIMS

1. (Currently Amended): A system having diamond-like carbon (DLC) contact surfaces, comprising:

relatively movable, facing contact surfaces at least one of which is coated with DLC, and

a lubricant for a system having DLC contact surfaces interposed between said contact surfaces, said lubricant fulfilling following conditions (a), (b), (c), and (d):

(a) wherein said lubricant for a system having DLC contact surfaces comprises a lubricant base oil (A) containing, as a main component, a base oil (X) consisting at least one of a hydrocracked mineral oil, a wax-isomerized mineral oil, and a poly- α -olefin base oil, wherein said base oil (X) has a kinematic viscosity of ~~2 to 20~~ 3.5 to 5 mm²/s at 100 °C, a total aromatic content of ~~not higher than 5~~ 0 to 2 mass%, and a sulfur content of not higher than ~~0.005~~ 0.002 mass%;

(b) wherein said lubricant for a system having DLC contact surfaces has a sulfur content of not higher than 0.2 mass%;

(c) wherein said lubricant comprises a 0.05 to 0.3 mass% sulfur-free metal detergent (B) selected from the group consisting of alkali metal or alkaline earth metal salicylates, alkali metal or alkaline earth metal phenates without sulfur cross-linking, and alkali metal or alkaline earth metal carboxylates, in terms of metal elements, a 0.01 to 0.1 mass% zinc dialkylphosphate in terms of phosphorous elements as a sulfur-free phosphorus compound (C), and a 0.05 to 3.0 mass% friction modifier comprising C₆-C₃₀ aliphatic amine, an oxygen-containing organic compound selected from the group consisting of alcohols, carboxylic acids, and esters other than glycol esters, and/or a derivative thereof; and

(d) wherein said lubricant is free of sulfur-containing additives selected from the group consisting of zinc dithiophosphate, sulfur-containing metal detergents, and mixtures thereof.

2. (Currently Amended): The system according to claim 1, wherein said lubricant for a system having DLC contact surfaces further comprises ~~at least one of a sulfur-free phosphorus compound (C), and~~ a sulfur-free ashless anti-oxidant (D).

3. (Canceled)

4. (Original): The system according to claim 1, wherein said contact surfaces comprise contact surfaces in an internal combustion engine.

5. (Currently Amended): A method of lubricating DLC contact surfaces, comprising lubricating relatively movable, facing contact surfaces at least one of which is coated with DLC, with a lubricant for a system having DLC contact surfaces interposed between said contact surfaces, said lubricant fulfilling following conditions (a), (b), (c), and (d):

(a) wherein said lubricant for a system having DLC contact surfaces comprises a lubricant base oil (A) containing, as a main component, a base oil (X) consisting at least one of a hydrocracked mineral oil, a wax-isomerized mineral oil, and a poly- α -olefin base oil, wherein said base oil (X) has a kinematic viscosity of ~~2 to 20~~ 3.5 to 5 mm²/s at 100 °C, a total aromatic content of ~~not higher than 5~~ 0 to 2 mass%, and sulfur content of not higher than ~~0.005~~ 0.002 mass%;

(b) wherein said lubricant for a system having DLC contact surfaces has a sulfur content of not higher than 0.2 mass%;

(c) wherein said lubricant comprises a 0.05 to 0.3 mass% sulfur-free metal detergent (B) selected from the group consisting of alkali metal or alkaline earth metal salicylates, alkali metal or alkaline earth metal phenates without sulfur cross-linking, and alkali metal or alkaline earth metal carboxylates, in terms of metal elements, a 0.01 to 0.1 mass% zinc dialkylphosphate in terms of phosphorus elements as a sulfur-free phosphorus compound (C), and a 0.05 to 3.0 mass% friction modifier comprising C₆-C₃₀ aliphatic amine, an oxygen-containing organic compound selected from the group consisting of alcohols, carboxylic acids, and esters other than glycol esters, and/or a derivative thereof; and

(d) wherein said lubricant is free of sulfur-containing additives selected from the group consisting of zinc dithiophosphate, sulfur-containing metal detergents, and mixtures thereof.

6. (Currently Amended): A lubricant for a system having DLC contact surfaces, said lubricant being for lubricating relatively movable, facing contact surfaces at least one of which is coated with DLC, and fulfilling following conditions (a), (b), (c) and (d):

(a) wherein said lubricant for a system having DLC contact surfaces comprises a lubricant base oil (A) containing a base oil (X) as a main component, said base oil (X) consisting at least one of a hydrocracked mineral oil, a wax-isomerized mineral oil, and a poly- α -olefin base oil, and having a kinematic viscosity of ~~2 to 20~~ 3.5 to 5 mm²/s at 100 °C, a total aromatic content of ~~not higher than 5~~ 0 to 2 mass%, and a sulfur content of not higher than ~~0.005~~ 0.002 mass%;

(b) wherein said lubricant for a system having DLC contact surfaces has a sulfur content of not higher than 0.2 mass%

(c) wherein said lubricant comprises a 0.05 to 0.3 mass% sulfur-free metal detergent (B) selected from the group consisting of alkali metal or alkaline earth metal salicylates, alkali metal or alkaline earth metal phenates without sulfur cross-linking, and alkali metal or alkaline earth metal carboxylates, in terms of metal elements, a 0.01 to 0.1 mass% zinc dialkylphosphate in terms of phosphorus elements as a sulfur-free phosphorus compound (C), and a 0.05 to 3.0 mass% friction modifier comprising C₆-C₃₀ aliphatic amine, an oxygen-containing organic compound selected from the group consisting of alcohols, carboxylic acids, and esters other than glycol esters, and/or a derivative thereof; and

(d) wherein said lubricant is free of sulfur-containing additives selected from the group consisting of zinc dithiophosphate, sulfur-containing metal detergents, and mixtures thereof.

7. (Currently Amended): The lubricant according to claim 6, further comprising ~~at least one of a sulfur-free phosphorus compound (C), and~~ a sulfur-free ashless anti-oxidant (D).

8. (Canceled)

9. (Canceled)

10. (New): The system according to claim 1, wherein said sulfur-free metal detergent (B) is an alkali metal or alkaline earth metal salicylate.

11. (New): The method according to claim 5, wherein said sulfur-free metal detergent (B) is an alkali metal or alkaline earth metal salicylate.

12. (New): The lubricant according to claim 6, wherein said sulfur-free metal detergent (B) is an alkali metal or alkaline earth metal salicylate.